9207L161-WES-755

0044600

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLE RECEIVED:** 07-25-92
RFW #: 9207L161, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 07-22-92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 3/90 for TCL Volatile target compounds on 08-03,04-92.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were not detected in these samples.

2. All system monitoring compound (surrogate) recoveries were within EPA QC limits.

3. All matrix spike recoveries were within EPA QC limits.

4. All blank spike recoveries were within EPA QC limits.

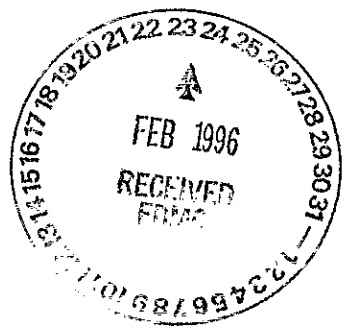
5. The laboratory blanks contained the common contaminants Methylene Chloride and Acetone at levels less than 4x the CRQL.

6. Internal standard areas were outside QC limits for sample B06M61. The associated matrix spike analyses fulfilled its re-analysis requirement.

08.19.92
Date

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

te/voa/07-161v.cn



WESTON Analytics Use Only

9207L-161

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client WESTINGHOUSE HANFORD / W.V. SETZER

Est. Final Proj Sampling Date

Work Order # 6168-02-01-0000

Project Contact/Phone # W.V. SETZER / 509-376-2413

AD Project Manager

QC Chf Del Chf TAT 35 day

Date Rec'd 7-25-92 Date Due 8/29/92

Account # WS-HANFORD

	VOA	BNA	Pest/PCB	Herb				Metal	CN		
Refrigerator #	1	5	5		4	4			1	SUB	
#/Type Container Solid	2G	1	2G		2G	2G			1	1G	
Volume Solid		1							1		
Preservatives											
WESTON Analytics Use Only	0624H	0625H	SEMI-VOA 0628H		TCFL TC504 IONS	MHSLTO			ICNTO	ISUB	

ANALYSES REQUESTED: ORGANIC (VOA, BNA, Pest/PCB, Herb), Anions/TC SO4, NO3, VOC/HA Metals Hg, GH; INORG (Metal, CN); Gross Alpha/Beta, Gamma, Sr-90, C-14, U-235/238, Pu-239/240, Am-241

MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb					Metal	CN		
001	B06M61			SOIL	7-22-92	0905	X	✓	X		X	X				✓	X	

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: SEE WHC CHAIN OF CUSTODY

Project: 100-NR-2

Metals = HSL

Radio Chem = Gross alpha/Beta, Gamma Scan
Sr-90, C-14, U-235/238, Pu-239/240, Am-241

Original rewritten

DATE/REVISIONS: RAD INFO TO FOLLOW

1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 2509868774
2) Ambient or Chilled (circled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec'd (Y) or N

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Emery	B. Dolfr	7/25/92	14:30				-
	[signature] 7-27-92				[signature] 7-27-92		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:

RFW 21-21-001/A-7/91 L372 L373 L375 L377 L378 Ref# Cooler# SML-301 381-596a

000002

0000003 92071-161

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: W.V. SETZER

Company Contact: CM CHANCE — Telephone: 376-7619

Project Designation/Sampling Locations: 100-NR-2 — Collection Date: 7-22-92

Ice Chest No.: SML 301 — Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~THA/NORCAL~~ WESTON (WVS 7-22-92)

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

	Sample Identification	
1) B06M61 (WVS 7-22-92)	2 1,120ml	aG:CLP;VOA
	1,250ml	aG:CLP;ICP/AA Metals,Hg,Cn
(WVS 7-22-92)	1, ~~1000~~ 500ml	aG:CLP;SEMI-VOA,PCB/PEST
	1, 500ml	aG:300.0;Anions(SO4,F);353.3Anions(NO3)
	1,1000ml	G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am241
2)	~~1~~ 1,120ml	aG:CLP;VOA
	~~1~~ 1,250ml	aG:CLP;ICP/AA Metals,Hg,Cn
	1,1000ml	aG:CLP;SEMI-VOA,PCB/PEST
		300.0;Anions(SO4,F);353.3Anions(NO3)
	1,1000ml	G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am241
3)	1,120ml	aG:CLP;VOA (WVS 7-22-92)
	1,250ml	aG:CLP;ICP/AA Metals,Hg,Cn
	1,1000ml	aG:CLP;SEMI-VOA,PCB/PEST
		300.0;Anions(SO4,F);353.3Anions(NO3)
	1,1000ml	G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am241

[ ] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: W.V. SETZER	Received by: J.R. REEVES	Date/Time: 7-23-92 0700
Relinquished by: J.R. REEVES	Received by:	Date/Time:
Relinquished by: Emery	Received by: Dillon Hall	Date/Time: 7/25/92 14:30
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

9207L161

FORM OF PAYMENT

SERVICES

Check ☐ G.X. ☐ FOCOD ☐

Bill to Shipper ☐ Bill to Consignee ☐ Third Party Billing ☐

EMERY WORLDWIDE

A CF Company

UNITED STATES / CANADA: Same Day ☐ AM ☐ PM ☐ Second Day ☐ Saturday Delivery ☐

INTERNATIONAL: Express ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

E 851281585 Shipper's Account Number

Date: 07-24-92 | Origin: PSC | Shipment Number: 250986927 4

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
DQ 1163
2355 STEVENS DRIVE
RICHLAND WA

To:
PEG BEATY
rf weston INC
208 WELSH POOL ROAD
LIONVILLE PA

Tariff Dest. | Gateway

Check to Shipper $

Hold for Pick Up ☐ | Canada ☐

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation

Customer's Reference Numbers
W122( ) P89AC W92-0-0436 #4077352

E Consignee's Account Number 19341

Description	Pcs	L	W	H	Total Pieces	Total Weight
1 SML 201 POLYCOOLER SOIL SAMPLES B06M61 W92-0-0436#40	1				1	39

SATURDAY DELIVERY

Shipper's Signature X

Zip Ship ☐
For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used
Urgent Letter 9X12 ☐ Urgent Pack 12X15 ☐

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

2 5 0 9 8 6 9 2 7 4

International Shipments: First Domicile ☐ Commodity Code

Third Party Account Number mandatory for Third Party Billing: E

Third Party Account Number

International Customs Value | International Insurance

Base Charge

Total Transportation Charges

Other Charges/Advance at Origin: COMO ☐ $

3-PHL-5

Terms and Conditions on Back

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 08/10/92 15:41

RFW Batch Number: 9207L161 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Page: 1a

	Cust ID:	B06M61	B06M61	B06M61	VBLK	VBLK	VBLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	92LVK134-MB1	92LVK135-MB1	92LVK135-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.04	1.04	1.04	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	105 %	104 %	102 %	103 %	102 %	104 %
	Bromofluorobenzene	94 %	101 %	101 %	98 %	98 %	100 %
	1,2-Dichloroethane-d4	116 %	118 %	117 %	97 %	101 %	103 %
Chloromethane		11 U	11 U	11 U	10 U	10 U	10 U
Bromomethane		11 U	11 U	11 U	10 U	10 U	10 U
Vinyl Chloride		11 U	11 U	11 U	10 U	10 U	10 U
Chloroethane		11 U	11 U	11 U	10 U	10 U	10 U
Methylene Chloride		16 B	15 B	15 B	8	5	6 B
Acetone		28 B	16 B	7 JB	21	31	19 B
Carbon Disulfide		11 U	11 U	11 U	10 U	10 U	10 U
1,1-Dichloroethene		11 U	82 %	79 %	10 U	10 U	90 %
1,1-Dichloroethane		11 U	11 U	11 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		11 U	11 U	11 U	10 U	10 U	10 U
Chloroform		11 U	11 U	11 U	10 U	10 U	10 U
1,2-Dichloroethane		11 U	11 U	11 U	10 U	10 U	10 U
2-Butanone		11 U	11 U	11 U	10 U	10 U	10 U
1,1,1-Trichloroethane		11 U	11 U	11 U	10 U	10 U	10 U
Carbon Tetrachloride		11 U	11 U	11 U	10 U	10 U	10 U
Bromodichloromethane		11 U	11 U	11 U	10 U	10 U	10 U
1,2-Dichloropropane		11 U	11 U	11 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		11 U	11 U	11 U	10 U	10 U	10 U
Trichloroethene		11 U	94 %	95 %	10 U	10 U	103 %
Dibromochloromethane		11 U	11 U	11 U	10 U	10 U	10 U
1,1,2-Trichloroethane		11 U	11 U	11 U	10 U	10 U	10 U
Benzene		11 U	93 %	92 %	10 U	10 U	96 %
trans-1,3-Dichloropropene		11 U	11 U	11 U	10 U	10 U	10 U
Bromoform		11 U	11 U	11 U	10 U	10 U	10 U
4-Methyl-2-pentanone		11 U	11 U	11 U	10 U	10 U	10 U
2-Hexanone		11 U	11 U	11 U	10 U	10 U	10 U
Tetrachloroethene		11 U	11 U	11 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		11 U	11 U	11 U	10 U	10 U	10 U
Toluene		11 U	97 %	97 %	10 U	10 U	102 %

*= Outside of EPA CLP QC limits.

	Cust ID:	B06M61	B06M61	B06M61	VBLK	VBLK	VBLK BS
	RFW#:	001	001 MS	001 MSD	92LVK134-MB1	92LVK135-MB1	92LVK135-MB1
Chlorobenzene		11 U	95 %	96 %	10 U	10 U	100 %
Ethylbenzene		11 U	11 U	11 U	10 U	10 U	10 U
Styrene		11 U	11 U	11 U	10 U	10 U	10 U
Xylene (total)		11 U	11 U	11 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET 0 0 0 0 2 4

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 4.80 (g/mL) G

Lab File ID: AK8320

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: not dec. 9

Date Analyzed: 08/03/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.04

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	16	B
67-64-1	Acetone	28	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

0000025

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161 01

Sample wt/vol: 4.80 (g/mL) G

Lab File ID: AK8320

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: not dec. 9

Date Analyzed: 08/03/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.04

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					

Roy F. Weston, Inc. - Lionville Laboratory
Semivolatiles by GC/MS, HSL List

RFW Batch Number: 9207L161 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000

Sample Information	Cust ID:	B06M61	B06M61	B06M61	SBLK	SBLK BS
	RFW#:	001	001 MS	001 MSD	92LE1208-MB1	92LE1208-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	57 %	62 %	66 %	73 %	80 %
	2-Fluorobiphenyl	53 %	64 %	64 %	70 %	77 %
	Terphenyl-d14	97 %	98 %	94 %	100 %	97 %
	Phenol-d5	57 %	65 %	68 %	76 %	89 %
	2-Fluorophenol	57 %	63 %	63 %	76 %	91 %
	2,4,6-Tribromophenol	79 %	79 %	78 %	79 %	89 %
	2-Chlorophenol-d4	55 %	62 %	64 %	75 %	87 %
	1,2-Dichlorobenzene-d4	54 %	57 %	60 %	73 %	80 %
Phenol		360 U	65 %	69 %	330 U	88 %
bis(2-Chloroethyl)ether		360 U	360 U	360 U	330 U	330 U
2-Chlorophenol		360 U	62 %	66 %	330 U	88 %
1,3-Dichlorobenzene		360 U	360 U	360 U	330 U	330 U
1,4-Dichlorobenzene		360 U	58 %	63 %	330 U	80 %
1,2-Dichlorobenzene		360 U	360 U	360 U	330 U	330 U
2-Methylphenol		360 U	360 U	360 U	330 U	330 U
2,2'-oxybis(2-Chloropropane)		360 U	360 U	360 U	330 U	330 U
4-Methylphenol		360 U	360 U	360 U	330 U	330 U
N-Nitroso-di-n-propylamine		360 U	72 %	74 %	330 U	93 %
Hexachloroethane		360 U	360 U	360 U	330 U	330 U
Nitrobenzene		360 U	360 U	360 U	330 U	330 U
Isophorone		360 U	360 U	360 U	330 U	330 U
2-Nitrophenol		360 U	360 U	360 U	330 U	330 U
2,4-Dimethylphenol		360 U	360 U	360 U	330 U	330 U
bis(2-Chloroethoxy)methane		360 U	360 U	360 U	330 U	330 U
2,4-Dichlorophenol		360 U	360 U	360 U	330 U	330 U
1,2,4-Trichlorobenzene		360 U	63 %	69 %	330 U	84 %
Naphthalene		360 U	360 U	360 U	330 U	330 U
4-Chloroaniline		360 U	360 U	360 U	330 U	330 U
Hexachlorobutadiene		360 U	360 U	360 U	330 U	330 U
4-Chloro-3-methylphenol		360 U	77 %	80 %	330 U	87 %
2-Methylnaphthalene		360 U	360 U	360 U	330 U	330 U
Hexachlorocyclopentadiene		360 U	360 U	360 U	330 U	330 U

*= Outside of EPA CLP QC limits.

Cust ID:	B06M61		B06M61		B06M61		SBLK		SBLK BS	
RFW#:	001		001 MS		001 MSD		92LE1208-MB1		92LE1208-MB1	
2,4,6-Trichlorophenol	360	U	360	U	360	U	330	U	330	U
2,4,5-Trichlorophenol	910	U	900	U	900	U	840	U	840	U
2-Chloronaphthalene	360	U	360	U	360	U	330	U	330	U
2-Nitroaniline	910	U	900	U	900	U	840	U	840	U
Dimethylphthalate	360	U	360	U	360	U	330	U	330	U
Acenaphthylene	360	U	360	U	360	U	330	U	330	U
2,6-Dinitrotoluene	360	U	360	U	360	U	330	U	330	U
3-Nitroaniline	910	U	900	U	900	U	840	U	840	U
Acenaphthene	360	U	79	%	81	%	330	U	90	%
2,4-Dinitrophenol	910	U	900	U	900	U	840	U	840	U
4-Nitrophenol	910	U	93	%	98	%	840	U	91	%
Dibenzofuran	360	U	360	U	360	U	330	U	330	U
2,4-Dinitrotoluene	360	U	101 *	%	103 *	%	330	U	104 *	%
Diethylphthalate	360	U	360	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	330	U	330	U
Fluorene	360	U	360	U	360	U	330	U	330	U
4-Nitroaniline	910	U	900	U	900	U	840	U	840	U
4,6-Dinitro-2-methylphenol	910	U	900	U	900	U	840	U	840	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	330	U	330	U
Hexachlorobenzene	360	U	360	U	360	U	330	U	330	U
Pentachlorophenol	910	U	99	%	103	%	840	U	97	%
Phenanthrene	360	U	360	U	360	U	330	U	330	U
Anthracene	360	U	360	U	360	U	330	U	330	U
Carbazole	360	U	360	U	360	U	330	U	330	U
Di-n-butylphthalate	80	JB	72	JB	85	JB	49	J	39	JB
Fluoranthene	360	U	360	U	360	U	330	U	330	U
Pyrene	360	U	118	%	117	%	330	U	117	%
Butylbenzylphthalate	360	U	360	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	330	U	330	U
Benzo(a)anthracene	360	U	360	U	360	U	330	U	330	U
Chrysene	360	U	360	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	260	J	220	J	420		330	U	330	U
Di-n-octyl phthalate	360	U	360	U	360	U	330	U	330	U
Benzo(b)fluoranthene	360	U	360	U	360	U	330	U	330	U
Benzo(k)fluoranthene	360	U	360	U	360	U	330	U	330	U
Benzo(a)pyrene	360	U	360	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	330	U	330	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 07-25-92
RFW #: 9207L161, SEMIVOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 07-22-92.

The sample and its associated QC samples were extracted on 07-30-92 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 08-19-92.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. Two (2) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.

4. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.

5. All internal standard area and retention time criteria were met.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

09.03.92
Date

kls/06-161b.cn

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 0 0 0 2 1

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V081905

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: 9 decanted: (Y/N)

Date Extracted: 07/30/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/19/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	2,2'-oxybis(2-Chloropropane)	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-di-n-propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
111-91-1	bis(2-Chloroethoxy)methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	910	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	910	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U
99-09-2	3-Nitroaniline	910	U
83-32-9	Acenaphthene	360	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

0 0 0 0 2 2

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V081905

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: 9 decanted: (Y/N)__

Date Extracted: 07/30/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/19/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	910	U
100-02-7	4-Nitrophenol	910	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	910	U
534-52-1	4,6-Dinitro-2-methylphenol	910	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	910	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
86-74-8	Carbazole	360	U
84-74-2	Di-n-butylphthalate	80	JB
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	360	U
56-55-3	Benzo(a)anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)phthalate	260	J
117-84-0	Di-n-octyl phthalate	360	U
205-99-2	Benzo(b)fluoranthene	360	U
207-08-9	Benzo(k)fluoranthene	360	U
50-32-8	Benzo(a)pyrene	360	U
193-39-5	Indeno(1,2,3-cd)pyrene	360	U
53-70-3	Dibenz(a,h)anthracene	360	U
191-24-2	Benzo(g,h,i)perylene	360	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 0 0 0 2 3

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V081905

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: 9 decanted: (Y/N)

Date Extracted: 07/30/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/19/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.5

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	6.50	200	JB
2.		ETHOXYETHOXYETHANOL	8.38	100	J
3.		UNKNOWN	18.42	70	J
4.		ORGANIC ACID	22.77	500	J
5.		ADIPATE	27.33	200	J
6.		UNKNOWN	28.17	300	J
7.		UNKNOWN	30.90	100	J

Roy F. Weston, Inc. - Lionville Laboratory
Pesticide/PCB by GC, CLP List

RFW Batch Number: 9207L161 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 09/04/92 16:26 Page: 1

	Cust ID:	B06M61	B06M61	B06M61	B06M61	B06M61	B06M61
Sample Information	RFW#:	001	001	001 MS	001 MS	001 MSD	001 MSD
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg CONFIRM	ug/Kg	ug/Kg CONFIRM	ug/Kg	ug/Kg CONFIRM
Surrogate:	Tetrachloro-m-xylene	60 %	52 * %	62 %	50 * %	80 %	70 %
Surrogate:	Decachlorobiphenyl	68 %	68 %	72 %	70 %	88 %	88 %
Alpha-BHC		1.8 U	NA	1.8 U	NA	1.8 U	NA
Beta-BHC		1.8 U	NA	1.8 U	NA	1.8 U	NA
Delta-BHC		1.8 U	NA	1.8 U	NA	1.8 U	NA
gamma-BHC (Lindane)		1.8 U	NA	68 %	70 %	84 %	86 %
Heptachlor		1.8 U	NA	60 %	62 %	72 %	74 %
Aldrin		1.8 U	NA	62 %	58 %	76 %	70 %
Heptachlor epoxide		1.8 U	NA	1.8 U	NA	1.8 U	NA
Endosulfan I		1.8 U	NA	1.8 U	NA	1.8 U	NA
Dieldrin		3.7 U	NA	71 %	71 %	86 %	87 %
4,4'-DDE		3.7 U	NA	3.7 U	NA	3.7 U	NA
Endrin		3.7 U	NA	72 %	75 %	89 %	91 %
Endosulfan II		3.7 U	NA	3.7 U	NA	3.7 U	NA
4,4'-DDD		3.7 U	NA	3.7 U	NA	3.7 U	NA
Endosulfan sulfate		3.7 U	NA	3.7 U	NA	3.7 U	NA
4,4'-DDT		3.7 U	NA	73 %	74 %	89 %	91 %
Methoxychlor		18 U	NA	18 U	NA	18 U	NA
Endrin ketone		3.7 U	NA	3.7 U	NA	3.7 U	NA
Endrin aldehyde		3.7 U	NA	3.7 U	NA	3.7 U	NA
alpha-Chlordane		1.8 U	NA	1.8 U	NA	1.8 U	NA
gamma-Chlordane		1.8 U	NA	1.8 U	NA	1.8 U	NA
Toxaphene		180 U	NA	180 U	NA	180 U	NA
Aroclor-1016		37 U	NA	37 U	NA	37 U	NA
Aroclor-1221		73 U	NA	73 U	NA	73 U	NA
Aroclor-1232		37 U	NA	37 U	NA	37 U	NA
Aroclor-1242		37 U	NA	37 U	NA	37 U	NA
Aroclor-1248		37 U	NA	37 U	NA	37 U	NA
Aroclor-1254		37 U	NA	37 U	NA	37 U	NA
Aroclor-1260		37 U	NA	37 U	NA	37 U	NA

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. Z= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

8A

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLE(S) RECEIVED:** 07-25-92
RFW #: 9207L161, PEST/PCB
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 07-22-92.

The sample and its associated QC samples were extracted on 07-31-92 and analyzed according to criteria set forth in the Contract Laboratory Program 03/90 SOW for Pesticide and PCB target compounds on 08-15,16-92.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. Linearity and breakdown criteria were met for each of the analytical columns.

2. Retention time criteria were met for all compounds on both analytical columns.

3. Resolution of all pesticides in the Resolution Check Standard were within EPA QC limits.

4. The RPDs of the pesticides in the individual mixes analyzed for calibration verification were within 25% for both analytical columns.

5. The RPDs of the pesticides in the Performance Evaluation Mixes analyzed for calibration verification were within 25% for both analytical columns.

6. Two (2) of twenty (20) surrogate recoveries were outside the EPA QC limits. The following surrogate recoveries were outside the EPA QC limit of 60%-150%:

	% Recovery For			
Sample ID	TCX1	TCX2	DCB1	DCB2
BO6M61	-	52	-	-
BO6M61 MS	-	50	-	-

7. All blank spike recoveries were within EPA QC limits.

8. All matrix spike recoveries were within EPA QC limits.

8 B

9. Recoveries of pesticides for the Florisil Cartridge Check were within EPA QC limits.

10. Recoveries of pesticides for the GPC calibration check were within EPA QC limits.

09.11.92

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

sma/pcb/07-161pp.cn

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

0006017

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 08149235.33

% Moisture: 8.8 decanted: (Y/N)_

Date Received: 07/25/92

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 07/31/92

Concentrated Extract Volume: 5000(uL)

Date Analyzed: 08/15/92

Injection Volume: 0.5(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
319-84-6	Alpha-BHC	1.8	U
319-85-7	Beta-BHC	1.8	U
319-86-8	Delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.7	U
7421934	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

9/4/92

RECORD COPY

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD
RFW #: 9207L161
W.O. #: 6168-02-01

SAMPLE(S) RECEIVED: 07-25-92

INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits. All %RPD were within the 20% guidance limit.

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

7. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

08.20.92
Date

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

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pas/i07-161

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 08/18/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9207L161

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	B06M61	% Solids	91.2		%	0.10
		Fluoride by IC	4.6		MG/KG	2.7
		Nitrate by IC	56.4		MG/KG	13.7
		Cyanide, Total	1.1	u	MG/KG	1.1
		Sulfate by IC	69.1		MG/KG	13.7

Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD/W.V. SETZER **SAMPLES RECEIVED:** 07/25/92
RFW #: 9207L161
W.O. #: 6168-02-01

METALS NARRATIVE

One (1) soil sample was collected on 07/22/92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 3/90.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analysis:

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

2. All ICV and CCV values were within control limits.

3. All ICB and CCB values were within control limits.

4. All preparation blank values were within control limits.

5. All LCS results were within the 80-120% control limits with the exception of silver on batch 92L1900-LC1 which was outside the control limits. However, based on control chart studies of laboratory control standards, internal control limits of 60-120% for water and 50-120% for soil samples are established for this laboratory.

6. All matrix spike recoveries were within the 75-125% control limits with the exceptions of antimony, manganese and selenium. All exceptions are flagged with a "N" on the CLP forms.

7. All duplicate analyses were within the 20% RPD control limits with the exceptions of aluminum, calcium, iron, magnesium, manganese and zinc. All exceptions are flagged with a "*" on the CLP forms.

8. Arsenic sample results were calculated by the method of standard addition (MSA). All corresponding samples were flagged with a "S" according to CLP protocol.

9. For MSA, results reported on Form 8 are calculated from absorbance values. Results reported on other forms are based on concentration. As indicated in the SOWILM01.0, page B-32, differences due to rounding may be found between the MSA values on Form 8 and the results reported on the other forms.

10. The code CV is currently in use by the laboratory for both mercury instruments in operation (HG1 and HG2). HG1 is complete with autosampler and software, but still requires manual digestion; HG2 is operated by the analyst, produces a strip chart and also requires manual digestion.

11. HG1 requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).

12. Quarterly Detection Limits, ICP Interelement Correction Factors and ICP Linear Ranges for IC3 are included in this package, but do not appear on EDD.

13. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratories

09.15.92
Date

mlj\ clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/10/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9207L161

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	B06M61	Silver, Total	2.2	u	MG/KG	2.2
		Aluminum, Total	3130		MG/KG	43.9
		Arsenic, Total	2.2	u	MG/KG	2.2
		Barium, Total	76.2		MG/KG	43.9
		Beryllium, Total	1.1	u	MG/KG	1.1
		Calcium, Total	4800		MG/KG	1100
		Cadmium, Total	1.1	u	MG/KG	1.1
		Cobalt, Total	11.0	u	MG/KG	11.0
		Chromium, Total	8.3		MG/KG	2.2
		Copper, Total	8.2		MG/KG	5.5
		Iron, Total	6470		MG/KG	21.9
		Mercury, Total	0.11	u	MG/KG	0.11
		Potassium, Total	1100	u	MG/KG	1100
		Magnesium, Total	2040		MG/KG	1100
		Manganese, Total	135		MG/KG	3.3
		Sodium, Total	1100	u	MG/KG	1100
		Nickel, Total	8.8	u	MG/KG	8.8
		Lead, Total	3.8		MG/KG	0.66
		Antimony, Total	13.2	u	MG/KG	13.2
		Selenium, Total	1.1	u	MG/KG	1.1
		Thallium, Total	2.2	u	MG/KG	2.2
		Vanadium, Total	11.6		MG/KG	11.0
		Zinc, Total	21.6		MG/KG	4.4

U.S. EPA - CLP 00019

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B06M61

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP161

Matrix (soil/water): SOIL Lab Sample ID: 920716101

Level (low/med): LOW Date Received: 7/25/92

% Solids: 91.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3130.00		*	P
7440-36-0	Antimony	9.65	U	N	P
7440-38-2	Arsenic	1.50	B	W	F
7440-39-3	Barium	76.20			P
7440-41-7	Beryllium	.29	B		P
7440-43-9	Cadmium	.88	U		P
7440-70-2	Calcium	4800.00		*	P
7440-47-3	Chromium	8.30			P
7440-48-4	Cobalt	4.70	B		P
7440-50-8	Copper	8.20			P
7439-89-6	Iron	6470.00		*	P
7439-92-1	Lead	3.80			F
7439-95-4	Magnesium	2040.00		*	P
7439-96-5	Manganese	135.00		N*	P
7439-97-6	Mercury	.05	U		CV
7440-02-0	Nickel	8.60	B		P
7440-09-7	Potassium	747.00	B		P
7782-49-2	Selenium	.44	U	N	F
7440-22-4	Silver	1.32	U		P
7440-23-5	Sodium	108.00	B		P
7440-28-0	Thallium	.44	U		F
7440-62-2	Vanadium	11.60			P
7440-66-6	Zinc	21.60		*	P
	Cyanide	1.10	U		C

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9207L161-WES-755

DATA QUALIFICATION SUMMARY

UNIT: 100-HR-2

DOCUMENT CONTROL NUMBER: WHC-SD-EN-TI-140

ANALYSES: VOC, BNA, Pest/PCB, Inorganics, Wet Chemistry

RFW NO.: 9207L161-WES-755

SDG NO.: B06M61

QUALIFICATION SUMMARY:

VOLATILES

SAMPLE NUMBERS: B06M61

BLANKS

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for methylene chloride:

- Sample number B06M61 in SDG No. B06M61.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for acetone:

- Sample number B06M61 in SDG No. B06M61.

INTERNAL STANDARDS PERFORMANCE

The internal standard recovery results for bromochloromethane and difluorobenzene exceeded QC limits for sample number B06M61 in SDG No. B06M61.

All associated sample results were qualified as estimates and flagged "J".

SEMIVOLATILES

SAMPLE NUMBERS: B06M61

HOLDING TIMES

The seven-day holding time was exceeded for the following sample:

- Sample number B06M61 in SDG No. B06M61.

BLANKS

Due to the presence of di-n-butylphthalate in the laboratory blank, the following associated sample result for the above analyte were qualified as non-detects (U qualifier):

- Sample number B06M61 in SDG No. B06M61.

ACCURACY

The MS/MSD recovery results did not meet QC limits for sample number B06M61 in SDG No. B06M61. All associated sample results were qualified as estimates and flagged "J".

PESTICIDES/PCBS

SAMPLE NUMBERS: B06M61

HOLDING TIMES

The seven-day holding time was exceeded for the following sample:

- Sample number B06M61 in SDG No. B06M61.

SURROGATE RECOVERY

The surrogate recovery results for tetrachloro-m-xylene in sample number B06M61 in SDG No. B06M61 were slightly below QC limits. Therefore, all associated sample results were flagged "J" and are considered to be estimates

INORGANICS

SAMPLE NUMBERS: B06M61

BLANKS

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for arsenic:

- Sample number B06M61 in SDG No. B06M61.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for beryllium:

- Sample number B06M61 in SDG No. B06M61.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for cobalt:

- Sample number B06M61 in SDG No. B06M61.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for nickel:

- Sample number B06M61 in SDG No. B06M61.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for potassium:

- Sample number B06M61 in SDG No. B06M61.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for sodium:

- Sample number B06M61 in SDG No. B06M61.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for vanadium:

- Sample number B06M61 in SDG No. B06M61.

MATRIX SPIKE RECOVERY

The matrix spike recoveries fell outside the quality control requirement for antimony in SDG No. B06M61.

The matrix spike recoveries fell outside the quality control requirement for manganese in SDG No. B06M61.

The matrix spike recoveries fell outside the quality control requirement for selenium in SDG No. B06M61.

All associated sample results were qualified as estimates and flagged "J".

LABORATORY DUPLICATE SAMPLES

The laboratory duplicate results fell outside the established QC limits for aluminum in SDG No. B06M61.

The laboratory duplicate results fell outside the established QC limits for calcium in SDG No. B06M61.

The laboratory duplicate results fell outside the established QC limits for iron in SDG No. B06M61.

The laboratory duplicate results fell outside the established QC limits for magnesium in SDG No. B06M61.

The laboratory duplicate results fell outside the established QC limits for manganese in SDG No. B06M61.

The laboratory duplicate results fell outside the established QC limits for zinc in SDG No. B06M61.

All associated sample results were qualified as estimates and flagged "J".

ANALYTICAL SPIKE RECOVERIES

The analytical spike recovery fell outside the established QC limits for arsenic:

Sample number B06M61 in SDG No. B06M61.

All associated sample results were qualified as estimates and flagged "J".

WET CHEMISTRY

SAMPLE NUMBERS: B06M61

No Data Qualified.

9207-161

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: W.V. SETZER

Company Contact: CM CHANCE — Telephone: 376-7619

Project Designation/Sampling Locations: 100-NR-2 — Collection Date: 7-22-92

Ice Chest No.: SML 301 — Field Logbook No.: EFL-1022

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~THA/NORCAL~~ WVS 7-22-92 WESTON

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

	Sample Identification	
1) B06M61 WVS 7-22-92	WVS 7-22-92 2 1,120ml	aG:CLP;VOA
	1,250ml	aG:CLP;ICP/AA Metals,Hg,Cn
	WVS 7-22-92 1, ~~1000~~ 500ml	aG:CLP;SEMI-VOA,PCB/PEST
	1, 500ml	aG:300.0;Anions(SO4,F);353.3Anions(NO3)
	1,1000ml	G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am241
2)	~~1,120ml~~	aG:CLP;VOA
	~~1,250ml~~	aG:CLP;ICP/AA Metals,Hg,Cn
	1,1000ml	aG:CLP;SEMI-VOA,PCB/PEST
		300.0;Anions(SO4,F);353.3Anions(NO3)
	1,1000ml	G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am241
3)	1,120ml	aG:CLP;VOA WVS 7-22-92
	1,250ml	aG:CLP;ICP/AA Metals,Hg,Cn
	1,1000ml	aG:CLP;SEMI-VOA,PCB/PEST
		300.0;Anions(SO4,F);353.3Anions(NO3)
	1,1000ml	G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am241

[ ] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: W.V. SETZER	Received by: J.R. REEVES	Date/Time: 7-23-92 0700
Relinquished by: J.R. REEVES	Received by:	Date/Time:
Relinquished by: Emery	Received by: Fedex	Date/Time: 7/25/92 14:30
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

FORM OF PAYME[illegible]

Check ☐ C.O.D. ☐ [illegible] FOCOD ☐

9207L161

Bill to Shipper ☐ Bill to Consignee ☐ Third Party Billing ☐

EMERY WORLDWIDE

A CF Company

SERVICES

UNITED STATES / CANADA: Same Day ☐ AM ☐ PM ☐ Second Day ☐ Saturday Delivery ☐

INTERNATIONAL: Express ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

E 85 1281585 — Shipper's Account Number

Date: 07-24-92 — Origin: PSC — Shipment Number: 250986927 4

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA Canada ☐

To:
[illegible] PEG BEATY
rf weston INC
208 WELSH POOL ROAD
LIONVILLE PA Canada ☐ Hold for Pick Up ☐

Tariff Dest. | Gateway

Check to Shipper $

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation

Customer's Reference Numbers
W122C0 PB9AC W92-0-0436 #40[illegible]352

E Consignee's Account Number 19341

Description	Pcs	L	W	H	Total Pieces	Total Weight
1 SML 2D1 POLYCOOLER SOIL SAMPLES B06M61 W92-0-0436#40	1				1	39

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

2 5 0 9 8 6 9 2 7 4

SATURDAY DELIVERY

Zip Ship ☐ — For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used — Urgent Letter 9X12 ☐ Urgent Pack 12X15 ☐

Shipper's Signature X [illegible] 7/24

International Shipments — Prod Domicile ☐ Commodity Code

Third Party Account Number mandatory for Third Party Billing. E Third Party Account Number

International Customs Value | International Insurance

Base Charge

Total Transportation Charges | Other Charges/Advance at Origin ☐ COD ☐ $

3-PHL-SAT

Terms and Conditions on Back

WESTON Analytics Use Only: 9207L161

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WESTINGHOUSE HANFORD / W.W. SETZER
Est. Final Proj. Sampling Date
Work Order #: 6168-02-01-0000
Project Contact/Phone #: W.W. SETZER / 509-376-2413
AD Project Manager: [illegible]
QC: [illegible] Del: [illegible] TAT: 35 days
Date Rec'd: 7-25-92 Date Due: 8/29/92
Account #: WS-HANFORD

Refrigerator #		1	5	3		4	4		1	SUB				
#/Type Container	Liquid													
	Solid	aG	1	aG		1aG	1aG		1	1G				
Volume	Liquid													
	Solid	3/120ml	1	1/500ml		1/500ml	1/500ml		1	1/1000ml				
Preservatives														
ANALYSES REQUESTED		VOA (ORGANIC)	BNA (ORGANIC)	Pest/PCB (ORGANIC)	Herb (ORGANIC)	Anions, SO4, NO3	ICP/AA Metals Hg, CN	Metal (INORG)	CN (INORG)	Gross Alpha, Beta, Gamma, Sr-90, C-14, U-235/238, Pu-239/240, Am-241				
WESTON Analytics Use Only		0624H	0625H	SEMI-VOA 0608H		ICFL ICSO4 ICNO3	MHSL70		ICNTD	ISUB				

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	Anions	ICP/AA Metals	Metal	CN	Rad				
S - Soil	001	B06M61			SOIL	7-22-92	0905	X	✓	X		X	X		✓	X				
SE - Sediment																				
SO - Solid																				
SL - Sludge																				
W - Water																				
O - Oil																				
A - Air																				
DS - Drum Solids																				
DL - Drum Liquids																				
L - EP/TCLP Leachate																				
WI - Wipe																				
X - Other																				
F - Fish																				

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: SEE WHC CHAIN OF CUSTODY

Project: 100-NR-2

Metals = HSL

Radio Chem = Gross alpha/Beta, Gamma Scan, SR-90, C-14, U-235/238, PU-239/240, Am 241

Original rewritten

DATE/REVISIONS: RAD INFO TO FOLLOW
1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 2509968274
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec'd (Y) or N

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Emery	B. [illegible]	7/25/92	14:30				-
	[illegible] 7-27-92				[illegible] 7-27-92		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET 0000024

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 4.80 (g/mL) G

Lab File ID: AK8320

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: not dec. 9

Date Analyzed: 08/03/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.04

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	16	B
67-64-1	Acetone	28	B
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 0 0 2 1

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V081905

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: 9 decanted: (Y/N)

Date Extracted: 07/30/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/19/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	2,2'-oxybis(2-Chloropropane)	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-di-n-propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
111-91-1	bis(2-Chloroethoxy)methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	910	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	910	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U
99-09-2	3-Nitroaniline	910	U
83-32-9	Acenaphthene	360	U

5/3/93

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 0 0 0 0 2 2

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V081905

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: 9 decanted: (Y/N)

Date Extracted: 07/30/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/19/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	910	U
100-02-7	4-Nitrophenol	910	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	910	U
534-52-1	4,6-Dinitro-2-methylphenol	910	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	910	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
86-74-8	Carbazole	360	U
84-74-2	Di-n-butylphthalate	360 80	JB
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	360	U
56-55-3	Benzo(a)anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)phthalate	260	J
117-84-0	Di-n-octyl phthalate	360	U
205-99-2	Benzo(b)fluoranthene	360	U
207-08-9	Benzo(k)fluoranthene	360	U
50-32-8	Benzo(a)pyrene	360	U
193-39-5	Indeno(1,2,3-cd)pyrene	360	U
53-70-3	Dibenz(a,h)anthracene	360	U
191-24-2	Benzo(g,h,i)perylene	360	U

(1) - Cannot be separated from Diphenylamine

PBN 5/3/93

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 0023
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V081905

Level: (low/med) LOW

Date Received: 07/25/92

% Moisture: 9 decanted: (Y/N)

Date Extracted: 07/30/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/19/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	6.50	200	JB
2.		ETHOXYETHOXYETHANOL	8.38	100	J
3.		UNKNOWN	18.42	70	J
4.		ORGANIC ACID	22.77	500	J
5.		ADIPATE	27.33	200	J
6.		UNKNOWN	28.17	300	J
7.		UNKNOWN	30.90	100	J

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

0006017

CLIENT SAMPLE NO.

B06M61

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9207L161-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 08149235.33

% Moisture: 8.8 decanted: (Y/N)

Date Received: 07/25/92

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 07/31/92

Concentrated Extract Volume: 5000(uL)

Date Analyzed: 08/15/92

Injection Volume: 0.5(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.5

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
319-84-6	Alpha-BHC	1.8	U J
319-85-7	Beta-BHC	1.8	U
319-86-8	Delta-BHC	1.8	U
58-89-9	gamma-BHC (Lindane)	1.8	U
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	U
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	3.7	U
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	18	U
53494-70-5	Endrin ketone	3.7	U
7421934	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	1.8	U
5103-74-2	gamma-Chlordane	1.8	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	73	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

9/4/12

1-18-93 SC

RB 5/3/93

U.S. EPA - CLP 00019

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B06M61

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP161

Matrix (soil/water): SOIL Lab Sample ID: 920716101

Level (low/med): LOW Date Received: 7/25/92

% Solids: 91.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3130.00		J	P
7440-36-0	Antimony	9.65	U	UJ	P
7440-38-2	Arsenic	1.50	B	WJ	F
7440-39-3	Barium	76.20			P
7440-41-7	Beryllium	.29	B	U	P
7440-43-9	Cadmium	.88	U		P
7440-70-2	Calcium	4800.00		J	P
7440-47-3	Chromium	8.30			P
7440-48-4	Cobalt	4.70	B	U	P
7440-50-8	Copper	8.20			P
7439-89-6	Iron	6470.00		J	P
7439-92-1	Lead	3.80		J	F
7439-95-4	Magnesium	2040.00		J	P
7439-96-5	Manganese	135.00		NJ	P
7439-97-6	Mercury	.05	U		CV
7440-02-0	Nickel	8.60	B	U	P
7440-09-7	Potassium	747.00	B	U	P
7782-49-2	Selenium	.44	U	UJ	F
7440-22-4	Silver	1.32	U		P
7440-23-5	Sodium	108.00	B	U	P
7440-28-0	Thallium	.44	U		F
7440-62-2	Vanadium	11.60		U	P
7440-66-6	Zinc	21.60		J	P
	Cyanide	1.10	U		C

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 08/18/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9207L161

SAMPLE	SITE ID	method#	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	B06M61		% Solids	91.2		%	0.10
		200.7	Fluoride by IC	4.6		MG/KG	2.7
		200.7	Nitrate by IC	56.4		MG/KG	13.7
		335.2	Cyanide, Total	1.1	u	MG/KG	1.1
		200.7	Sulfate by IC	69.1		MG/KG	13.7

ROY F. WESTON INC.

INORGANIC LABORATORY CONTROL STANDARDS REPORT 08/18/92

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	92LC187-LC1	Cyanide, Total LCS	9.1	10.0	MG/KG	90.8
LCS2	92LC187-LC2	Cyanide, Total LCS	9.5	10.0	MG/KG	95.0

ROY F. WESTON INC.

INORGANIC METHOD BLANK DATA SUMMARY PAGE 08/18/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9207L161

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
BLANK10	92LICS15-MB1	Fluoride by IC	2.5	u	MG/KG	2.5
		Nitrate by IC	1.2	u	MG/KG	1.2
		Sulfate by IC	1.2	u	MG/KG	1.2
BLANK1	92LC187-MB1	Cyanide, Total	1.0	u	MG/KG	1.0

12.18.93 SC

ROY F. WESTON INC.

INORGANIC ACCURACY REPORT 08/18/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9207L161

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	B06M61	Fluoride by IC	60.0	4.6	54.8	101
		Fluoride by IC MSD	60.0	4.6	54.8	101
		Nitrate by IC	333	56.4	274	101
		Nitrate by IC MSD	338	56.4	274	103
		Cyanide, Total	4.9	1.1 u	5.5	89.9
		Cyanide, Total MSD	5.4	1.1 u	5.5	98.3
		Sulfate by IC	347	69.1	274	101
		Sulfate by IC MSD	351	69.1	274	103
BLANK10	92LICS15-MB1	Fluoride by IC	50.4	2.5 u	50.0	101
		Fluoride by IC MSD	50.1	2.5 u	50.0	100
		Nitrate by IC	25.2	1.2 u	25.0	101
		Nitrate by IC MSD	25.0	1.2 u	25.0	100
		Sulfate by IC	25.3	1.2 u	25.0	101
		Sulfate by IC MSD	25.1	1.2 u	25.0	101

ROY F. WESTON INC.

INORGANIC DUPLICATE SPIKE REPORT 08/18/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9207L161

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%RPD
-001	B06M61	Fluoride by IC	101	101	0.069
		Nitrate by IC	101	103	1.8
		Cyanide, Total	89.9	98.3	9.0
		Sulfate by IC	101	103	1.4
BLANK10	92LICS15-MB1	Fluoride by IC	101	100	0.60
		Nitrate by IC	101	100	0.72
		Sulfate by IC	101	101	0.50
LCS2	92LC187-LC2	Cyanide, Total LCS	90.8	95.0	4.5

ROY F. WESTON INC.

INORGANIC PRECISION REPORT 08/18/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9207L161

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	%RPD
-001REP	B06M61	Fluoride by IC	4.6	4.6	0.85
		Nitrate by IC	56.4	56.6	0.20
		Cyanide, Total	1.1 u	1.1 u	NC
		Sulfate by IC	69.1	67.8	1.9

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: Westinghouse	REVIEWER: SC	DATE: 1-18-93
LABORATORY: Weston	CASE:	SDG: B06M61
SAMPLES/MATRIX: Soil		
B06M61		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓	—	—	
Data Summary	✓	—	—	
Chain-of-Custody		✓	—	—
QC Summary				
Surrogate report		✓	—	—
MS/MSD report		✓	—	—
Blank summary report	✓	—	—	
GC/MS tuning report	✓	—	—	
Internal standard summary report		✓	—	—
Sample Data				
Sample reports	✓	—	—	
TIC reports for each sample		—	—	✓
RIC reports for all samples		✓	—	—
Raw and corrected spectra for all detected results		✓	—	—
Raw and corrected library search data for all reported TIC	—	—	✓	
Quantitation and calculation data for all TIC	—	—	✓	
Standards Data				
Initial calibration report		✓	—	—
RIC and quantitation reports for initial calibration		✓	—	—
Continuing calibration reports	✓	—	—	
RIC and quantitation reports for cont. calibrations		✓	—	—
Internal standard summary report		✓	—	—
Raw QC Data				
Tuning report, spectra and mass lists	✓	—	—	
Blank analysis reports	✓	—	—	
TIC reports for all blanks		—	—	✓
RIC and quantitation reports for blanks		✓	—	—
Raw and corrected spectra for all detected results in blanks	✓	—	—	
Raw and corrected library search data for all reported TIC	—	—	✓	

Data Package Item	Present?:	Yes	No	N/A
Quantitation and calculation data for all TIC			✓	
MS/MSD report forms	✓			
RIC and quantitation reports for MS/MSD		✓		
Additional Data				
Moisture/% solids data sheets		✓		
Reduction formulae			✓	
Instrument time logs		✓		
Chemist notebook pages			✓	
Sample preparation sheets			✓	

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for non-detects), otherwise reject all non-detects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a BFB tune report present for each applicable 12h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? Yes (No) N/A

Do all tunes on all instruments meet the expanded criteria? Yes No (N/A)

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for non-detects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? Yes No (N/A)

Are all RSD values ≤30% (2/88 SOW)? Yes No (N/A)

Are all RRF values ≥0.05 (2/88 SOW)? Yes No (N/A)

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all non-detects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for non-detects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12h periods in which associated samples were analyzed ?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all non-detects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for non-detects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all sample results < 10X the highest blank concentration for the common laboratory contaminants, as non-detects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results <5X the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No (N/A)

ACTION: Qualify all detected sample results less than or equal to five times the amount in any valid field blank as non-detects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes (No) N/A

Are any surrogate recoveries less than 10%? Yes (No) N/A

Are any method blank surrogate recoveries out of specification? Yes (No) N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for non-detects) for surrogates out of specification but greater than 10%. Qualify all associated positive sample results as estimated (J) and all non-detect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? (Yes) No N/A

Are MS/MSD recoveries within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is greater than five times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are greater than five times the CRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? (Yes) No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes (No) N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for non-detects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? (Yes) No N/A

Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra? (Yes) No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? (Yes) No N/A

Have all ions >10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No (N/A)

Are molecular ions present in the reference specrum present in the sample spectrum? Yes No (N/A)

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation? (Yes) No N/A

Are results and quantitation limits calculated properly? (Yes) No N/A

Has the laboratory reported the sample quantitation limits within five times the CRQL values? (Yes) No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? Yes No (N/A)

Has the laboratory properly identified and coded all TIC? Yes No (N/A)

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as non-detects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as non-detects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? (Yes) No N/A

Were project specific data quality objectives met for this analysis? (Yes) No N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

PROJECT: Westinghouse	REVIEWER: SC	DATE: 1-18-93
LABORATORY: Weston	CASE:	SDG: B06M61
SAMPLES/MATRIX: Soil		
B06M61		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓			
Data Summary	✓			
Chain-of-Custody		✓		
QC Summary				
Surrogate report		✓		
MS/MSD report		✓		
Blank summary report	✓			
GC/MS tuning report	✓			
Internal standard summary report		✓		
Sample Data				
Sample reports	✓			
TIC reports for each sample		✓		
RIC reports for all samples		✓		
Raw and corrected spectra for all detected results		✓		
Raw and corrected library search data for all reported TIC	✓			
Quantitation and calculation data for all TIC	✓			
Standards Data				
Initial calibration report		✓		
RIC and quantitation reports for initial calibration		✓		
Continuing calibration reports	✓			
RIC and quantitation reports for cont. calibrations		✓		
Internal standard summary report		✓		
Raw QC Data				
Tuning report, spectra and mass lists	✓			
Blank analysis reports	✓			
TIC reports for all blanks		✓		
RIC and quantitation reports for blanks		✓		
Raw and corrected spectra for all detected results in blanks	✓			
Raw and corrected library search data for all reported TIC	✓			
Quantitation and calculation data for all TIC	✓			
MS/MSD report forms	✓			

Data Package Item	Present?:	Yes	No	N/A
RIC and quantitation reports for MS/MSD		✓		
Additional Data				
Moisture/% solids data sheets		✓		
Reduction formulae			✓	
Instrument time logs		✓		
Chemist notebook pages			✓	
Sample preparation sheets			✓	

2. HOLDING TIMES

Were all samples extracted within holding time? Yes (No) N/A

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for non-detects), otherwise reject all non-detects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a DFTPP tune report present for each applicable 12h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No (N/A)

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for non-detects). If all tuning criteria are not met, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No (N/A)

Are all RSD values ≤30% (2/88 SOW)? Yes No (N/A)

Are all RRF values ≥0.05 (2/88 SOW)? Yes No (N/A)

Are all applicable RSD values ≤20.5% (3/90 SOW)? ~~Yes~~ (No) N/A

Are all applicable ~~RSD~~ RSD values ≤40% (3/90 SOW)? (Yes) No N/A

Are all applicable RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all non-detects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for non-detects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12h periods in which associated samples were analyzed? Yes No N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes No N/A

Are all %D values ≤25% (2/88 or 3/90 SOW)? Yes No N/A

Are all %D values ≤40% (3/90 SOW)? Yes No N/A

Are all RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all non-detects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for non-detects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch? Yes No N/A

Are compounds reported in the laboratory blanks? Yes No N/A

ACTION: Qualify all sample results <10X the highest blank concentration for the common laboratory contaminants, as non-detects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results <5X the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are compounds reported in the field blanks? Yes No (N/A)

ACTION: Qualify all detected sample results less than or equal to five times the amount in any valid field blank as non-detects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes (No) N/A

Are any surrogate recoveries less than 10%? Yes (No) N/A

Are any method blank surrogate recoveries out of specification? Yes (No) N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for non-detects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated non-detect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? (Yes) No N/A

Are MS/MSD recoveries within specification? Yes (No) N/A

Are there any calculation errors? Yes No (N/A)

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is greater than five times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the results for the performance audit samples within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are all RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are greater than five times the CRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for non-detects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? (Yes) No N/A

Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra? (Yes) No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? (Yes) No N/A

Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No (N/A)

Are molecular ions in the reference spectrum present in the sample spectrum? Yes No (N/A)

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards for quantitation? (Yes) No N/A

Are results and quantitation limits calculated properly? (Yes) No N/A

Has the laboratory reported the sample quantitation limits within five times the CRQL values? (Yes) No N/A

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? (Yes) No N/A

Has the laboratory properly identified and coded all TIC? (Yes) No N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as non-detects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as non-detects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	(Yes)	No	N/A
Were project specific data quality objectives met for this analysis?	(Yes)	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: Westinghouse	REVIEWER: SC	DATE: 1-18-93
LABORATORY: Weston	CASE:	SDG: B006M61
SAMPLES/MATRIX: Soil		
B006M61		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for re-submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓			
Data Summary	✓			
Chain-of-Custody		✓		
QC Summary				
Surrogate report		✓		
MS/MSD report		✓		
Blank summary report	✓			
Sample Data				
Sample reports	✓			
Chromatograms		✓		
GC integration reports	✓			
Worksheets		✓		
UV traces from GPC		✓		
GC/MS confirmation spectra		✓		
Standards Data				
Pesticides Evaluation Standards Summary		✓		
Pesticides/PCB Standards Summary		✓		
Pesticides/PCB identification		✓		
Pesticides standard chromatograms		✓		
Raw QC Data				
Blank analysis report forms and chromatograms		✓		
MS/MSD report forms and chromatograms		✓		

Data Package Item	Present?:	Yes	No	N/A
Additional Data				
Moisture/% solids data sheets	—	✓	—	
Reduction formulae	—	—	✓	—
Instrument time logs	—	✓	—	—
Chemist notebook pages	—	✓	—	—
Sample preparation sheets	—	—	✓	—

2. HOLDING TIMES

Were all samples extracted within holding time? Yes (No) N/A

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for non-detects), otherwise reject all non-detects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? Yes No (N/A)

ACTION: If DDT retention time is < 12 minutes and resolution is ≤25% qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No (N/A)

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No (N/A)

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns <20%? Yes No (N/A)

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all non-detects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns <20%? Yes No (N/A)

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated

(J) and all non-detects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? Yes No N/A

ACTION: If DBC %D values are outside the limits and the shift is ocurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC $\leq$10%? Yes No N/A

Have all standards been analyzed within 72 hours of any sample? Yes No N/A

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No N/A

Have all standards been analyzed at the start of each 72h sequence? Yes No N/A

Have evaluation standards A, B, and C been analyzed within 72h of any sample? Yes No N/A

Has the confirmation standard mix been analyzed after every 5 samples? Yes No N/A

Has evaluation standard B analyzed every 10 samples? Yes No N/A

Are %D values for initial and subsequent standards $\leq$15% for quantitation standards and $\leq$20% for confirmation standards? Yes No N/A

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? (Yes) No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns ≤20.0% (Yes) No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? (Yes) No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? (Yes) No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors <10.0% (<15.0% for the BHC series, DDT, endrin and methoxychlor)? (Yes) No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? (Yes) No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? (Yes) No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a non-compliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? (Yes) No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the non-compliant standard within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and non-detect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤25.0%? (Yes) No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs ≤20.0% (≤30.0% total combined)? (Yes) No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? (Yes) No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? (Yes) No N/A

Has the laboratory analyzed instrument blanks at the required frequency? (Yes) No N/A

Are target compounds present in the blanks? Yes (No) N/A

ACTION: Qualify all associated positive results as non-detects (U) that are <5X the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

Are target compounds present in the field blanks? Yes No (N/A)

ACTION: If target compounds are present in the field blanks qualify all positive sample results <5X the highest valid field blank concentrations as non-detects (U) and note the results in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification? (Yes) No N/A

Do any samples show non-detects for surrogates? Yes (No) N/A

Are any method blank surrogates out of specification? Yes (No) N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for non-detects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated non-detects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has the laboratory analyzed a MS/MSD per matrix for the the sample group? (Yes) No N/A

Are MS/MSD recoveries within specification? (Yes) No N/A

Are there any calculation or transcription errors? Yes (No) N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is greater than five times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification? (Yes) No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are greater than five times the CRQL qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No (N/A)

Were positive results analyzed on disimilar columns? Yes No (N/A)

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No (N/A)

Do retention times and relative peak height ratios match the expected patterns for multipeak compounds (PCB, toxaphene or chlordane)? Yes No (N/A)

Has GC/MS confirmation been conducted on sample extract concentrations > 10 ppm? Yes No (N/A)

ACTION: If positive results do not meet the retention time criteria qualify all detected results as non-detects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and non-detected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Are results and quantitation limits calculated properly? (Yes) No N/A

Has the laboratory reported the sample quantitation limits within five times the CRQL values? (Yes) No N/A

ACTION: If results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? (Yes) No N/A

Were project specific data quality objectives met for this analysis? (Yes) No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD Level: (low/med) LOW

RFW Lot No.: 9207L161

	CLIENT SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	B06M61	105	94	116		0
02	B06M61MS	104	101	118		0
03	B06M61MSD	102	101	117		0
04	VBLKLVK134-MB1	103	98	97		0
05	VBLKLVK135-MB1	102	98	101		0
06	VBLKLVK135-MB1 BS	104	100	103		0

	QC LIMITS
SMC1 (TOL) = Toluene-d8	(84-138)
SMC2 (BFB) = Bromofluorobenzene	(59-113)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of QC limits

D System Monitoring Compound diluted out

1-18-93SC

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9207L161-001

MATRIX Spike - Sample No.: B06M61 Level (low/med): LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	55.0	0	45.0	82	59 -172
Trichloroethene	55.0	0	51.9	94	62 -137
Benzene	55.0	0	51.0	93	66 -142
Toluene	55.0	0	53.4	97	59 -139
Chlorobenzene	55.0	0	52.1	95	60 -133

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
1,1-Dichloroethene	55.0	43.7	79	3	22	59 -172
Trichloroethene	55.0	52.4	95	1	24	62 -137
Benzene	55.0	50.9	92	1	21	66 -142
Toluene	55.0	53.3	97	0	21	59 -139
Chlorobenzene	55.0	53.0	96	1	21	60 -133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

1-18-93

COMMENTS: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: Westinghouse - Hanford	REVIEWER: SC	DATE: 1-18-93
LABORATORY: ~~Weston~~ Roy F. Weston	CASE:	SDG: B06M61
SAMPLES/MATRIX: Soil		
B06M61		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓			
Cover Page		✓		
Traffic Reports		✓		
Sample Data				
Inorganic Analysis Data Sheets		✓		
Standards Data				
Initial and Continuing Calibration Verification	✓			
CRDL Standard for AA and ICP		✓		
QC Summary				
Blanks	✓			
ICP Interference Check Summary		✓		
Spike Sample Recovery		✓		
Post-Digestion Spike Sample Recovery		✓		
Duplicate		✓		
Laboratory Control Sample		✓		
Standard Addition Results		✓		
ICP Serial Dilutions		✓		
Instrument Detection Limits		✓		
ICP Interelement Correction Factors	✓			
ICP Linear Ranges		✓		
Preparation Log		✓		
Analysis Run Log		✓		
Raw Data				
ICP Raw Data	✓			
Furnace AA Raw Data	✓			
Mercury Raw Data		✓		
Cyanide Raw Data		✓		
Additional Data				
Internal laboratory chain-of-custody	✓	✓		
Laboratory Sample Preparation Records		✓		

Data Package Item	Present?:	Yes	No	N/A
Percent Solids Analysis Records		✓	—	—
Reduction Formulae		—	✓	—
Instrument Run Logs	✓	—	—	
Chemist Notebook Pages		✓	—	—

2. HOLDING TIMES

Have all samples been analyzed within holding times? **Yes** No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for non-detects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? **Yes** No N/A

Are the correlation coefficients ≥0.995? **Yes** No N/A

Was a midrange CN standard distilled? **Yes** No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange CN standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? **Yes** No N/A

Are there calculation errors? Yes **No** N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? **Yes** No N/A

Are the AB solution %R values within control? **Yes** No N/A

Are there calculation errors? Yes **No** N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? (Yes) No N/A

ACTION: Qualify all associated sample results for any analyte <5X the amount in any laboratory blank as non-detected (U). If analyte concentrations in the blank are greater than the CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations less than 10x the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No (N/A)

ACTION: Qualify all sample results for any analyte <5X the amount in any valid field blank as non-detected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes (No) N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all non-detects as estimated (UJ). If spike recovery is <30%, reject all non-detects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? Yes No N/A

Are applicable duplicate injection RSD values within control? Yes No N/A

If no, were samples rerun once as required? Yes No N/A

Does the RSD for the rerun fall within the control limits? Yes No N/A

Were analytical spike recoveries within the control limits? Yes No N/A

If no, were MSA analyses performed when required? Yes No (N/A)

Are MSA correlation coefficients $\geq$0.995? Yes No (N/A)

If no, was a second MSA analysis performed? Yes No (N/A)

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for non-detects). If the analytical spike recovery is less than 40 percent qualify detects as estimated (J). If the analytical spike recovery is greater than or equal to 10% but less than 40 percent, qualify all non-detects as estimated (UJ) and if the analytical spike recovery is less than 10 percent, reject all non-detects (R). If the sample absorbance is less than 50% of the analytical spike absorbance and the analytical spike recovery is less than 85% or greater than 115%, qualify all results as estimated (J for detects and UJ for non-detects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was less than 0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? (Yes) No N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP? (Yes) No N/A

Are all detection limits below the CRQL? (Yes) No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? (Yes) No N/A

Were project specific data quality objectives met for this analysis? (Yes) No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: Westinghouse	REVIEWER: SC	DATE: 1-18-93
LABORATORY: Weston	CASE:	SDG: B06M61
SAMPLES/MATRIX: Soil		
B06M61		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓	—	—	
Cover Page		✓	—	—
Traffic Reports/Chain-of-Custody		✓	—	—
Sample Analysis Data Report Forms	✓	—	—	
Standards Data	✓	—	—	
QC Summary				
Blanks Summary Report Forms		✓	—	—
Spike Sample Recovery Report Forms	✓	—	—	
Duplicate Sample Analysis Report Forms		✓	—	—
Laboratory Control Sample Report Forms		✓	—	—
Raw Data				
Ion Chromatograph Chromatograms	✓	—	—	
TOC and TOX Instrument Printouts	✓	—	✓	
Laboratory Bench Sheets		✓	—	—
Additional Data				
Laboratory Sample Preparation Logs	✓	—	—	
Instrument Run Logs	✓	—	—	
Internal Laboratory Chain-of-Custory	✓	—	—	
Percent Solids Analysis Records		—	✓	—
Reduction Formulae		—	✓	—
Chemist Notebook Pages		✓	—	—

2. HOLDING TIMES

Were all samples analyzed within holding times? (Yes) No N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for non-detects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? Yes No N/A

Are the correlation coefficients ≥0.995? Yes No N/A

Was a balance check conducted prior to the TDS analysis? Yes No N/A

Was the titrant normality checked? Yes No N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency? Yes No N/A

Are ICV and CCV percent recoveries within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5X the amount in any laboratory blank as non-detected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5X the amount in any valid field blank as non-detected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits? Yes No N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are greater than the CRQL, qualify the data as estimated (J). If the spike recovery is less than 30% and the sample results are less then the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? (Yes) No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No (N/A)

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? (Yes) No N/A

Are instrument detection limits below the CRDL? (Yes) No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? (Yes) No N/A

Were project specific data quality objectives met for this analysis? (Yes) No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):